REMARKS

Responsive to the Final Office Action dated December 15, 2004, Claims 1-10 are pending for consideration, with Claim 1 being independent.

I. Summary of the Claims

Independent Claim 1 recites a solid electrolyte battery comprising a positive electrode, a negative electrode disposed opposite to the positive electrode, a separator disposed between the positive electrode and the negative electrode, and at least one solid electrolyte disposed between the positive electrode and the separator and between the separator and the negative electrode. The solid electrolyte comprises a mixture of a polymer and a swelling solvent present in a ratio of from about 1:5 to about 1:10. The separator comprises a polyolefin porous film having a thickness of from about 5 μm to about 15 μm and a volume porosity of from about 25% to about 60%. The impedance in the solid electrolyte battery is greater than the impedance realized at room temperature when the temperature of the solid electrolyte battery is from about 100°C to about 160°C. The solid electrolyte also has a thickness of from about 5 μm to about 19 μm.

II. The § 103(a) Rejection

Claims 1-10 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,716,421 to Pendalwar et al. with evidence shown by U.S. Patent No. 6,322,923 to Spotnitz et al. and U.S. Patent No. 5,665,265 to Gies et al.. For the following reasons, Applicant respectfully submits that the present invention is not obvious under § 103(a) and requests reconsideration and withdrawal of this rejection.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Pendalwar does not teach or suggest the claimed invention. In particular, Pendalwar does not teach or suggest a solid electrolyte battery wherein the solid electrolyte has a thickness of from about 5 μm-19 μm. In fact, Pendalwar teaches away from Applicant's claimed solid electrolyte thickness. In the Background of the Invention, Pendalwar teaches that conventional solid electrolytes, specifically gel electrolytes, are advantageously "fabricated in a non-dry environment." However, Pendalwar notes that gel electrolytes "may lack sufficient mechanical integrity to prevent shorting between the electrodes while they are being bonded or laminated together with the electrolyte." The gel electrolyte layer thickness is therefore "reported to be 75 μm, presumably to overcome this shorting problem and to help facilitate handling of the electrolyte material." Pendalwar then addresses the problem that, "[w]hen compared to the 25 μm thickness for separators used in liquid lithium ion cells, this results in a significant reduction in the volumetric energy density for the cell." This is precisely the problem that Applicant's invention has addressed whereas the Pendalwar invention does not. Pendalwar maintains a gel electrolyte having a conventional thickness of 75 μm to provide "good mechanical integrity and instead discloses an electrolyte layer that has "the ability to absorb sufficient amounts of an electrolyte active species so as to produce an electrolyte system with the high ionic conductivity characteristic of liquid electrolytes. The electrolytes so formed should also avoid excessive swelling and all of the problems associated therewith. The electrolyte should also have the ability to shut a cell into which it is incorporated off, once a threshold temperature is reached . . . ." Pendalwar, therefore, fails to teach or suggest reducing the thickness of the electrolyte layer as

a means of reducing internal short circuits and raising the energy density. Similarly, Spotnitz also does not teach or suggest a solid electrolyte layer having a thickness of from about 5 μm-19 μm. Morever, both Pendalwar and Spotnitz fail to provide motivation to provide such an electrolyte layer.

Gies also fails to teach or suggest a solid electrolyte layer having a thickness of from about 5 μm-19 μm. It is asserted that Gies teaches a 20 μm electrolyte layer in Example I. Applicant respectfully submits, however, that Gies teaches a polypropylene film of 35 μm thickness being dip coated in a PVDF solution that, after compression, is 40 μm (20 μm on each side of the polypropylene film). However, this is not the entire electrolyte layer. The PVDF is merely a gelling polymer into which an electrolyte active species that may be a liquid or solid component (or both) is absorbed prior to gelling of the PVDF. Thus, Gies provides no teaching or suggestion of a solid electrolyte layer having a thickness of from about 5 μm-19 μm. Moreover, there is no motivation in Gies to provide such an electrolyte layer.

Prima facie obviousness requires that there must be a reasonable expectation of success when prior art is modified or combined. In the present application, there is no reasonable expectation of success in achieving the invention as claimed when the cited references are modified or combined. As discussed above, neither of the cited references teach or suggest *all* the elements of Applicant's independent claim. Unless all the elements are taught by the reference, there can be no success in modifying it

Thus, at the time the present invention was made, none of the cited references teach or describe *all* of the limitations claimed by Applicant in its independent claim and the claims depending therefrom. Accordingly, independent claim 1 and the claims depending therefrom are nonobvious under § 103 (a).

III. Conclusion

Accordingly, Applicant respectfully submits that the present application is now in condition for allowance and courteously solicits the same. If the Examiner should have any questions regarding the foregoing, she is encouraged to call the undersigned at 816.460.2516. Should any fees be necessitated by this response, the Commissioner is hereby authorized to deduct any such fees from Deposit Account No. 19-3140.

Respectfully submitted,

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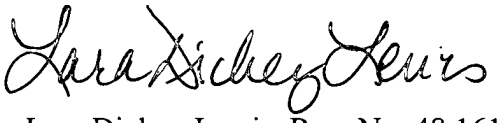
By 

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